DESIGN MEMORANDUM
SND NNSY 9070/13 (Rev. 7-78)

NORFOLK NAVAL SHIPYARD
PORTSMOUTH, VIRGINIA

NAVSEA DWG. NO.	A	53711	502	4886321	REV. B
TITLE SURFACE SHIP A/C CHW & CNDS DR GENERAL NOTES & DETAILS			PREPARED BY HINKLE III		DATE 9/23/83
			CHECKED BY M E RICE		DATE 9/19/83
			BRANCH SUPV. [illegible]		DATE 9/20/3
ABBVR. TITLE A/C CHW & CNDS DR GEN NOTES			SHIPALT NO.		

SHOP/CODE												
NO. OF PRINTS												
DATE												

SPECS:

1. THIS SKETCH SUPERSEDES NAVSHIPS DRAWING STD. 502-2258940.

2. NAVSHIPYDNORVA PROCESS INSTRUCTIONS REFERRED TO IN THIS DOCUMENT ARE INTENDED FOR NAVSHIPYDNORVA SHOP USE AND NOT NECESSARILY REQUIRED BY OTHER ACTIVITIES WHERE THIS STANDARD IS INVOKED.

REVISION STATUS OF SHEETS																		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
–	A	A	A	–	–	–	–	–	–	–	–	–	–					
B	B	B	B	B	B	–	–	B	–	–	–	B	B	B	B	B	B	B

DESIGN MEMORANDUM
SND MMSY 9070/13A (1-75)

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REVISIONS				
REV.	ZONE	DESCRIPTION	SHIPYARD DATE	SHIPYARD APPR.	U. S. N. DATE	U. S. N. APPR.
A		MOD NOTE 5, 10, 11, 24. J. MELNICK 2-22-84			2/29	
B	-	ADDED: NOTES 28,29,30 AND 31, SHEETS 15,16,17,18 AND 19. MODIFIED: NOTES 5,9,10,11,12,14,15,26 AND 27, SHEETS 9,13,14. RENUMBERED SHEETS 6 THRU 19.	4/2/82		4/2	J Melnick

REV	SHIPALT NUMBER	WEIGHT GROUP	WEIGHT	I OR R	V.C.G. REF. B.L. (2 DEC.)	L.C.G. REF. M.P. (1 DEC.)	F OR A	T.C.G. REF. C.L. (1 DEC.)	P OR S	SUBSAFE*	CATEGORY*

WEIGHT DATA

WEIGHT TO NEAREST POUND — LEVERS IN FEET
USE SEPARATE LINES FOR EACH WT.GRP., SHIPALT, REV., WT. ADDED, WT. REMOVED
* NUCLEAR SUBS ONLY (SEE NAVSHIPS 0902-002-2000 PART III)
I = INSTALL R = REMOVE F = FWD. A = AFT P = PORT S = STBD ℄ = ℄ X = LOAD ITEM

VESSEL	SHIPALT	JOB ORDER NUMBER	DATE	APPROVED

PLAN APPLICABILITY

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NAVSHIPS NUMBER 53711-502-4886321

1. UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES AND PIPE SIZES INDICATED ARE IRON PIPE SIZE.

2. EXISTING PIPING SHOWN WITH DOT-DASH LINES: NEW PIPING SHOWN SOLID.

3. RUN PIPING APPROXIMATELY AS SHOWN, MAKING MINOR DEVIATIONS TO SUIT CONDITIONS ABOARD SHIP.

4. ON WORKING DRAWINGS "X" DIMENSIONS ARE FROM CENTERLINE OF PIPE TO UNDERSIDE OF DECK ABV. "Y" DIMENSIONS ARE FROM CENTERLINE OF PIPE TO TOPSIDE OF DECK BELOW.

(B) (A) 5. FOR NEW AND DISTURBED CHILLED WATER SYSTEM PIPING, MAINTAIN SYSTEM CLEANLINESS BY CLEANING PIPE PRIOR TO INSTALLATION AND INSTALLING BLANKS, PROTECTIVE COVERS, ETC. CLEANLINESS TO BE IN ACCORDANCE WITH DRAWING 5371I-845-6069467-A CLEANLINESS REQUIREMENTS FOR NON-NUCLEAR PIPING SYSTEMS, CLEANLINESS LEVEL II, FLUX REMOVAL REQUIRED. (GRADE "C" CLEAN SYSTEM PER NAVSHIPYDNORVA PROCESS INSTR. 0091-401K)

6. PIPE CONNECTIONS TO COOLING COILS SHALL BE INSTALLED TO INSURE THAT CHILLED WATER SUPPLY TO THE COIL ENTERS THE AIR LEAVING SIDE OF THE COIL. SEE SHEET 7.

7. INSTALL CONDENSATE DRAIN LINES WITH A SLOPE OF 1/4 INCH PER FOOT WHERE POSSIBLE AND A MINIMUM OF 1/8 INCH PER FOOT IN DIRECTION OF FLOW.

8. CONDENSATE DRAIN LINES FROM COOLING COILS IN MEDICAL SPACES SHALL DRAIN TO THE MEDICAL PLUMBING SCUPPERS.

(B) 9. BRAZING OF PIPE JOINTS TO BE IN ACCORDANCE WITH NAVSHIPS TECH MANUAL 0900-001-7000 FOR CLASS P3b PIPING. ~~(NAVSHIPYDNORVA PROCESS INSTR 0074-405)~~

(B) (A) 10. PIPE HANGERS SHALL BE IAW STD DWG 810-4714432 REV B. A GUIDE WHICH MAY BE USED FOLLOWS:

HANGER NO.	PIPE SIZE RANGE	ORIENTATION	HANGER LENGTH
TYPE 38	2" IPS & BELOW	ANY POSITION	18" MAX
TYPE 2	1/4" IPS THRU 16" IPS	ANY POSITION	15" MAX
TYPE 5	1/4" IPS THRU 16" IPS	ATTACH TO OVHD OR DK	ABOVE 15"
TYPE 1	1/4" THRU 9" IPS	ATTACH TO OVHD	15" MAX

ALL ABOVE HANGERS SHALL HAVE A 1/4" THICK SYNTHETIC RUBBER LINER MIL-R-6855 CLASS II 60 DUROMETER.

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A/C CHW & CNDS DR GENERAL NOTES & DETAILS
SHEET NO 3 OF 19

(B) (A) 11. WELDING AND NDT OF PIPING SHALL CONFORM TO MIL-STD-278 FOR CLASS P-2 PIPING. WELD JOINT DESIGN SHALL CONFORM TO MIL-STD-0022 JOINT TYPES.

11.1 WHEN WELDING COPPER TO CUNI, BASE MATERIALS S-31 AND S-34 OF MIL-STD-278, THE FOLLOWING ARE SUGGESTED WELDING PARAMETERS.

GTAW PROCESS

CURRENT TYPE	DCSP
ELECTRODE	3/32" TUNGSTEN
ELECTRODE EXTENSION	1/4" MINIMUM
CUP SIZE	5/16" - 7/16"
SHIELD GAS, FLOW RATE	15 CFH MINIMUM ARGON 75%, HELIUM 25%
PREHEAT	60 DEG F MINIMUM
INTERPASS	350 DEG F MAXIMUM
PWHT (STRESS RELIEF)	NOT REQUIRED
FILLER MATERIAL	BARE WIRE, MIL-RN67
FILLER MATERIAL SIZE	1/16" OR 3/32" BARE WIRE
AMPERAGE RANGE	155 - 210

(B) 12. MISCELLANEOUS NON PIPING WELDING SHALL BE IAW MIL-STD-1689A. NO NDT REQUIRED UNLESS NOTED ON SHIPS INSTALLATION DRAWINGS.

13. WHERE PIPING PENETRATES FUMETIGHT OR NON-TIGHT BULKHEADS SUITABLE SHEET METAL COLLARS ARE TO BE FITTED.

(B) 14. CHILLED WATER PIPING PENETRATIONS THROUGH WATERTIGHT OR AIRTIGHT DECKS OR BULKHEADS SHALL BE INSULATED FROM THE DECK OR BULKHEAD WITH INSULATED SLEEVES AS SHOWN ON SHEET 17 AND 18 OF THIS DRAWING.

(B) 15. LABEL PLATES ARE TO BE PROVIDED AS SHOWN IN LABEL PLATE LIST ON PLAN. MANUFACTURE LABEL PLATES FROM ANODIZED ALUMINUM MIL-P-15024 METAL PHOTO PROCESS IAW DWG 605-4721371 "B".

16. SIZE OF PIPE PENETRATION OPENINGS THROUGH FUME-TIGHT AND NONTIGHT BULKHEADS SHALL BE IN ACCORDANCE WITH SHEET 11 FIG 4. PENETRATION DIA. IS BASED ON THE USE OF 3/4 INCH THICK INSULATION APPLIED ON THE CHILLED WATER PIPING.

17. ALL VALVES SHALL BE LOCATED SO AS TO BE READILY ACCESSIBLE FOR REPAIR AND OPERATION.

18. CUTOUT AND THROTTLING VALVES OF THE GLOBE TYPE SHALL BE INSTALLED WITH PRESSURE UNDER THE DISC.

19. CUTOUT VALVES SHALL BE INSTALLED IN ALL BRANCHES AS CLOSE AS IS PRACTICAL TO THE CHILLED WATER MAINS.

20. WHERE ELECTRICAL EQUIPMENT CANNOT BE PERMITTED IN THE SPACE (e.g. MAGAZINES) THE SOLENOID VALVE AND THERMOSTATIC CONTACT MAKER MUST BE LOCATED OUTSIDE OF THE SPACE.

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A/C CHW & CNDS DR GENERAL NOTES & DETAILS

21. MANUAL VENTS SHALL BE INSTALLED IN SUPPLY PIPING TO GRAVITY COILS AND IN HIGH POINTS OF CHILLED WATER SUPPLY AND RETURN PIPING.

22. SOLENIOD VALVES SHALL BE INSTALLED IN HORIZONTAL LINES AND SHALL HAVE THE SOLENOID PLUNGER IN THE VERTICAL POSITION EXCEPT THAT PILOT OPERATED VALVES NEED NOT HAVE PLUNGER IN THE VERTICAL POSITION. IT IS PREFERRED THAT SOLENOID VALVES BE INSTALLED IN THE RETURN PIPING LINE.

23. CONSTANT FLOW REGULATING FITTING MAY BE LOCATED IN EITHER CHILLED WATER SUPPLY OR RETURN LINES TO COOLING COILS. IF PRACTICAL A MINIMUM OF 10 PIPE DIAMETERS STRAIGHT RUN OF PIPING SHOULD BE PROVIDED UPSTREAM AND DOWNSTREAM OF FITTING.

(A) 24. WHEN INVOKED ON THE WORKING DRAWING NEW INSTALLED CHILLED WATER PIPING AND COMPONENTS SHALL BE CLEANED AND FLUSHED AS FOLLOWS:

A) UTILIZE EQUIPMENT AND METHOD EQUAL TO THAT SHOWN ON SHEET 9

B) REMOVE INTERNALS FROM ALL FLOW CONTROL FITTINGS AND SOLENOID VALVES.

C) INSTALL A COTTON MUSLIN BAG FILTER IN THE FLUSHING RIG STRAINER.

D) THOROUGHLY CLEAN THE PIPING AND COMPONENTS BY FLUSHING WITH 160 DEG F FRESH WATER. CONTINUE FLUSH UNTIL COTTON FILTER REMAINS FREE OF SOLID CONTAMINANTS.

25. NEW AND MODIFIED CHILLED WATER PIPING SHALL BE HYDROSTATICALLY TESTED WITH CLEAN FRESH WATER TO THE PRESSURE SPECIFIED ON THE WORKING DRAWING. HOLD TEST PRESSURE 30 MINIMUM PRIOR TO INSPECTION. NO LEAKS ALLOWED.

(B) 26. INSULATION SHALL BE IN ACCORDANCE WITH MIL-STD-769J FOR CHILLED FRESH WATER PIPING AT 40 TO 60 DEG F AND NAVSEA TECH MANUAL S9086-VH-STM-010/CHAPTER 635. THE INSULATION SHALL CONSIST OF PREFORMED SECTIONAL PIPE COVERING OF POLYPHOSPHAZENE ELASTOMERIC FOAM MATERIAL (MIL-I-24703) THICKNESS SHALL BE 3/4" ON ALL PIPE SIZES. GLASS CLOTH LAGGING SHALL BE APPLIED TO PROTECT INSULATION FROM DAMAGE IN HIGH TRAFFIC AREAS. MATERIAL WITH ANY ASBESTOS CONTENT SHALL NOT BE USED. PRIOR TO EXTERIOR PAINTING APPLY SEALER COAT OF RED TINTED ADHESIVE PER MIL-A-3316 CLASS 1 GRADE B TO THE EXTERIOR GLASS CLOTH LAGGING TO DENOTE AS ABESTOS-FREE INSTALLATION. ALL REMOVABLE PADS AND COVERS SHALL BE COLOR CODED IN SAME MANNER.

(B) 27. NEW AND MODIFIED CONDENSATE DRAIN PIPING SHALL BE BLANKED OFF, FILLED WITH CLEAN WATER AND HYDROSTATICALLY TESTED AT ATMOSPHERIC PRESSURE FOR TIGHTNESS FOR A MINIMUM OF 3 HOURS PRIOR TO INSPECTING. NO WEEPS OR LEAKS ALLOWED.

(B) 28. CHILLED WATER PIPING SERVING ALL CLASS COOLING COILS SHALL BE 90/10 CNA IN ACCORDANCE WITH MIL-T-16420.

(B) 29. CARE TO BE TAKEN THAT THE ALIGNMENT OF PIPE IS SUCH THAT FLANGES ARE PARALLEL AND BOLT HOLES ARE IN LINE BEFORE THE JOINT IS MADE.

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A/C CHW & CNDS DR GENERAL NOTES & DETAILS
SHEET NO 5 OF 19

(B) 30. PIPING SYSTEMS DESIGNATIONS AND MARKING SHALL BE IN ACCORDANCE WITH NAVSEA S9AA0-AB-GOS-010/GSO. WHERE PIPING SYSTEM LABELS ARE NOT PROVIDED BY THIS DRAWING, SYSTEM PIPING SHALL BE STENCILED FOR IDENTIFICATION OF SYSTEM FUNCTION, PRESSURE AND FLOW DIRECTION. STENCIL PAINT SHALL BE IN ACCORDANCE WITH FED. SPEC. TT-P-98. THE SYSTEM OPERATING PRESSURE IS _____ .

(B) 31. NEW CHILLED WATER SYSTEM VALVE HANDWHEELS AND/OR OPERATING LEVERS ON VALVES NOT EXPOSED TO THE WEATHER, EXCEPT GAGE VALVE HANDWHEELS LOCATED ON GAGEBOARDS, SHALL BE EITHER PAINTED IN ACCORDANCE WITH FED SPEC TT-E-489 OR COVERED WITH MIL-P-20689, TY1, CL1. THE COLOR SHALL BE STRIPPED LIGHT BLUE (15200) AND DARK GREEN (14062) IN ACCORDANCE WITH FED STD 595.

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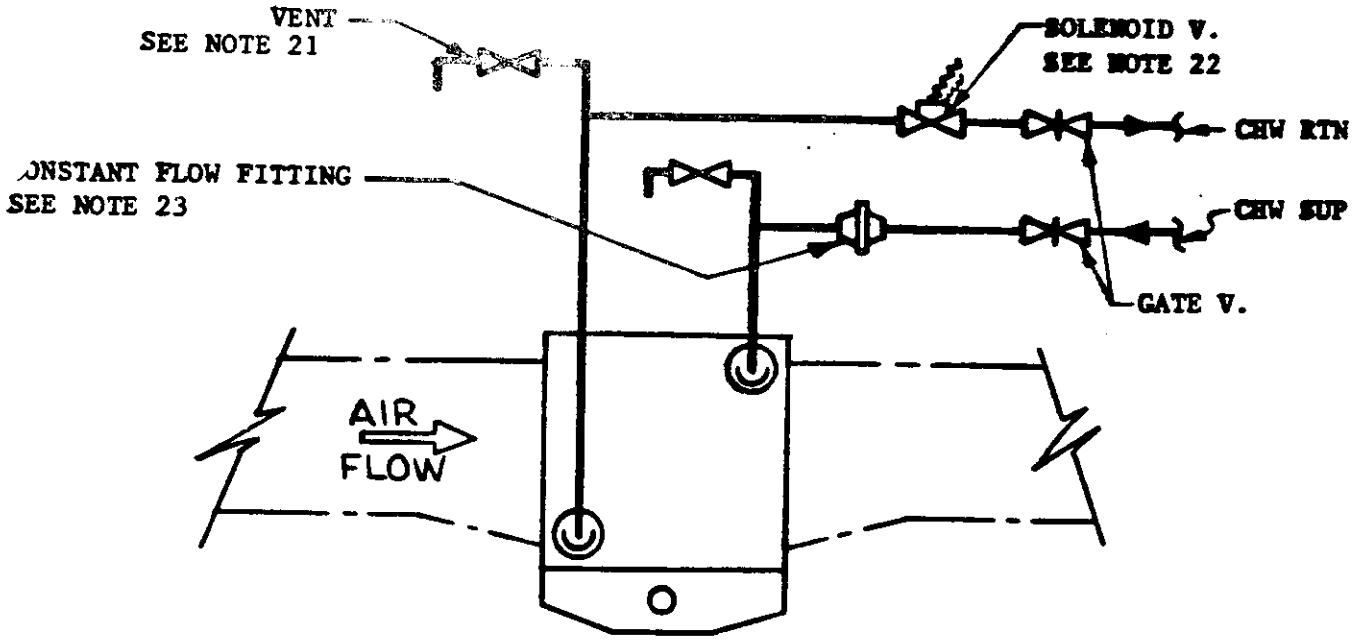
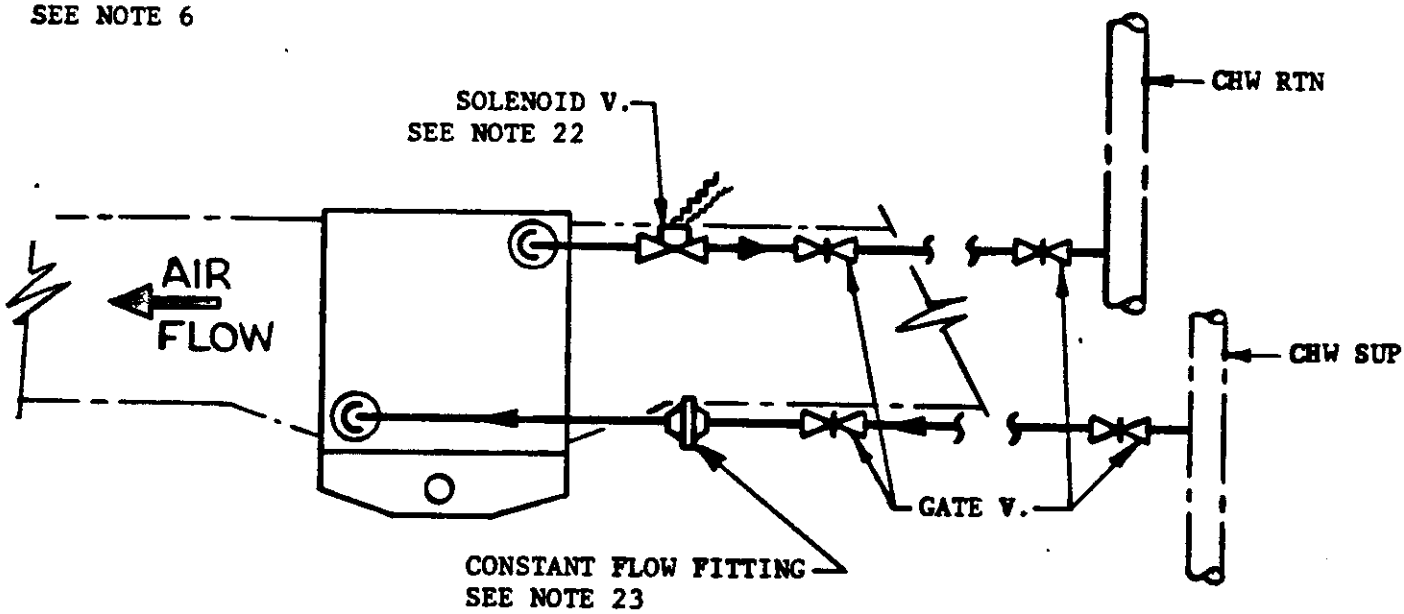
A/C CHW & CNDS DR
GENERAL NOTES & DETAILS

SHEET NO 6 OF 19



SPECIAL NOTE: CHW SUPPLY TO COIL MUST ENTER ON AIR LEAVING SIDE OF COIL SEE NOTE 6



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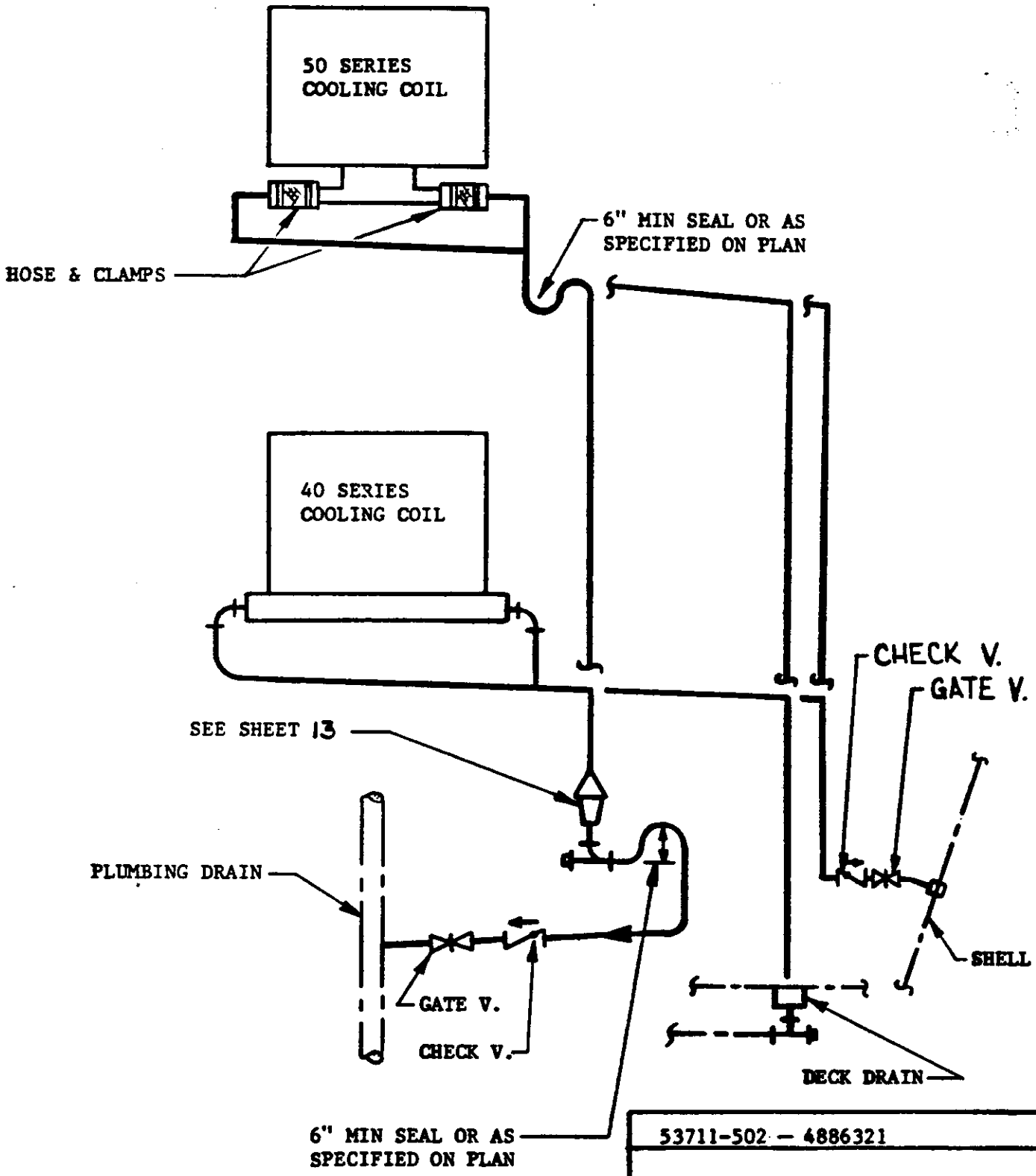
A/C CHW & CNDS DR STANDARD DETAILS TYPICAL CHW FP INSTL 40 & 50 SERIES C.C.	
SHEET NO. 7 OF 19	



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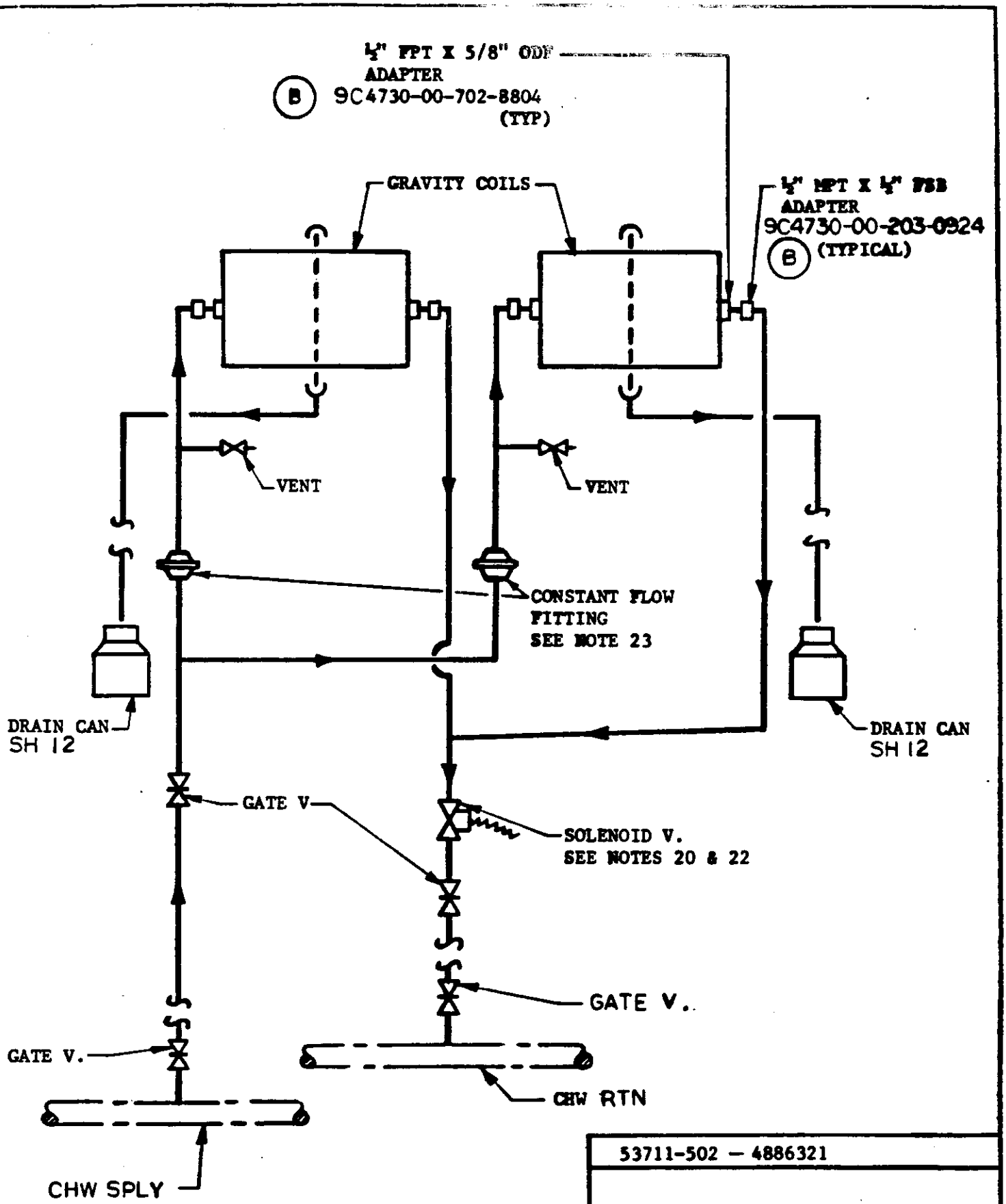
A/C CHW & CNDS DR
STANDARD DETAILS
TYPICAL CNDS DR PP
40 & 50 SERIES C.C.



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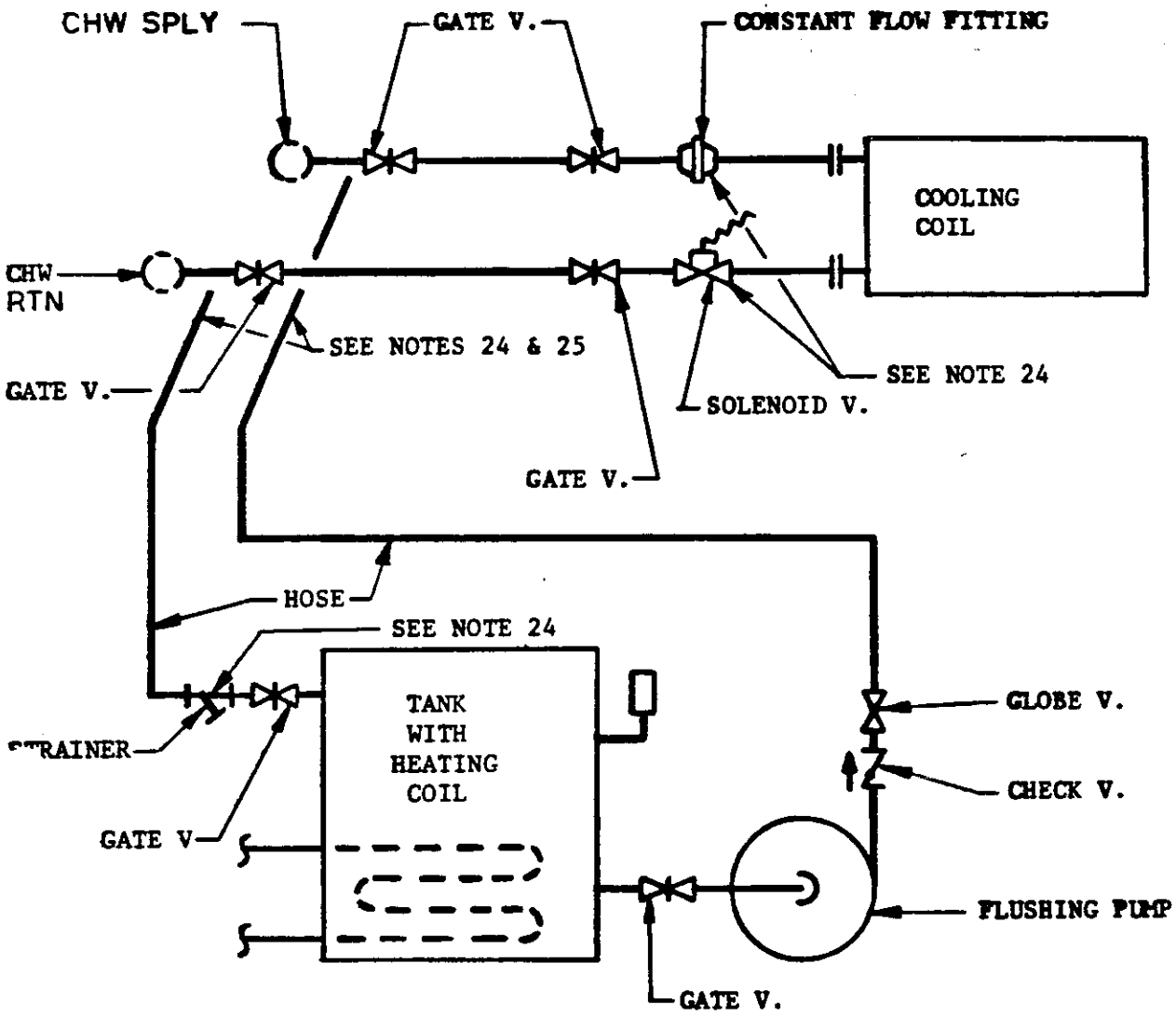
A/C CHW & CNDS DR
STANDARD DETAILS
GRAVITY COIL INSTL
TYPICAL

SHEET NO. 9 OF 19



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A/C CHW & CNDS DR
STANDARD DETAILS
TYPICAL FLUSHING DIAGRAM

SHEET NO. 10 OF 19

COOLING COIL CHW & CNDS DR CONN SIZES FOR 40, 50 SERIES C.C. & GRAVITY COILS

COIL SIZE DW OR UW	CHW	CNDS DR
41 & 51	3/4" IPS	1" IPS
42 & 52		
43 & 53		
44 & 54	1¼"	
45 & 55		
46 & 56		
47	2"	1¼"
48		
1G	5/8" O.D.	3/4"
3G		
5G		

FIGURE 2

CONSTANT FLOW FITTINGS

SIZE I.P.S.	RANGE G.P.M.	MFGR		# OF ORIFICES
½"	½-4	HAYS MEASURFLO OR EQUAL	10 DIAS OF STRAIGHT PIPE UPSTREAM AND DOWNSTREAM	1
3/4"	3½-8			1
1"	8-20			3
1¼"	18-50			7
*1½"	18-50			7
1½"	50-100			13

*WITH 1¼" BODY

FIGURE 1

SOLENOID VALVES

SIZE I.P.S.	RANGE G.P.M.
3/4"	1-7.5
1"	7.6-15
1¼"	16-30
1½"	31-60
2"	61-120

FIGURE 3

O.D. OF CHW PP WITH INSUL & LAGGING		F.T. & N.T. BHD OPENING SIZE
I.P.S.	O.D.	DIA.
½"	2 3/8"	2 3/4"
3/4"	2 1/2"	3"
1"	2 7/8"	3 1/4"
1 1/4"	3 1/4"	3 1/2"
1 1/2"	3 1/2"	3 3/4"
2"	4"	4 1/4"
2 1/2"	4 1/2"	4 2/4"
3"	5"	5 1/2"
3 1/2"	5 1/2"	6"
4"	6"	6 1/2"
5"	7 1/4"	7 1/2"
6"	8 1/4"	8 1/2"
8"	10 1/4"	10 1/2"

FIGURE 4

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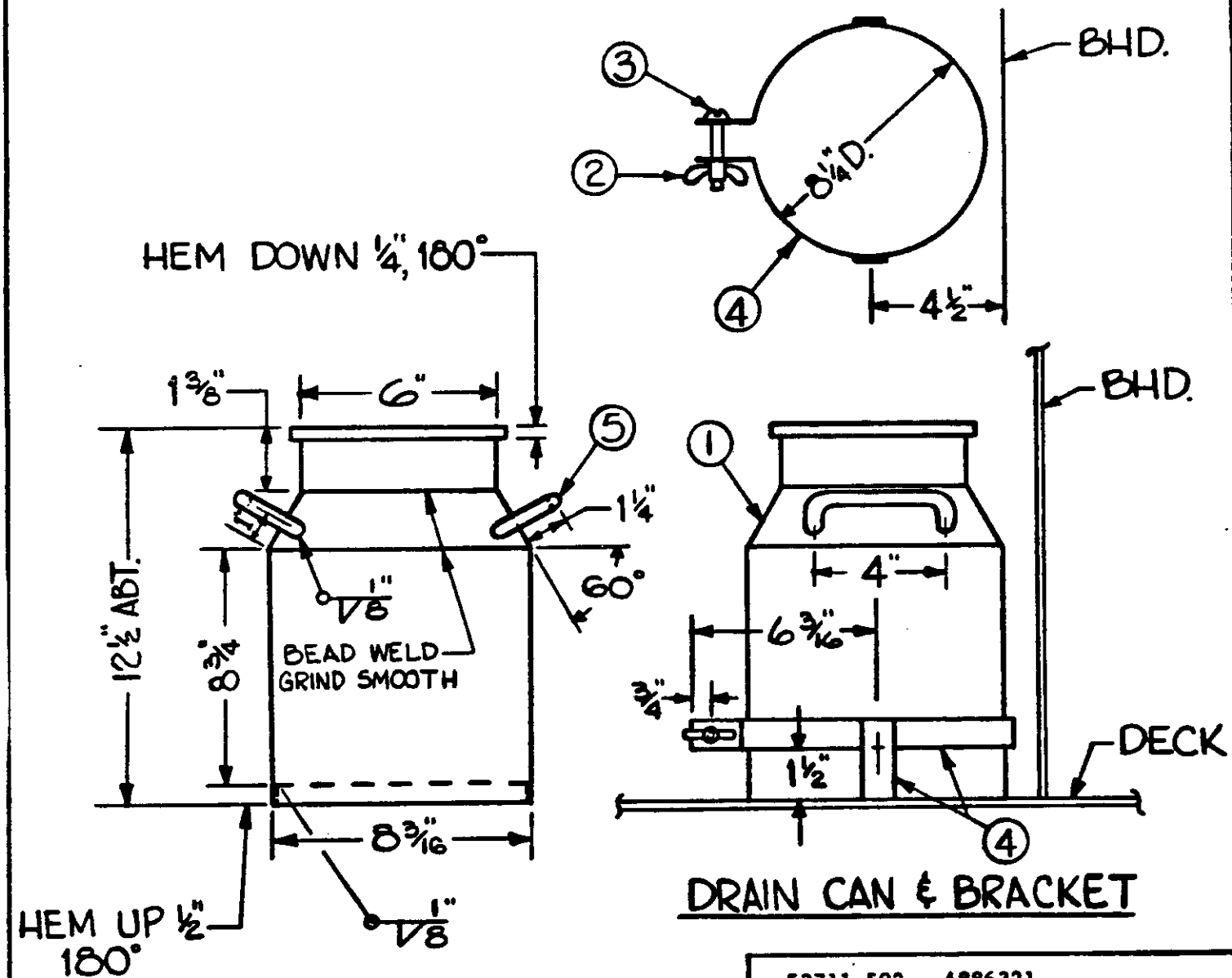
A/C CHW & CNDS DR
STANDARD DETAILS
FIGURES 1 THROUGH 4

SHEET NO. 11 OF 19

LIST OF MATL QUANTITIES FOR ONE DRAIN CAN					
PC.	NAME OF PC	QTY	MATL	MATL SPEC	REMARKS
1	DRAIN CAN	1	AL	QQ-A250/8	.080" THK
2	WING NUT	1	BRASS	MIL-B-895	5/16" - 18 NC-2
3	MACHINE SCREW	1	↓	↓	↓
4	STRAP & SUPPORT	1	STEEL	MIL-S-20166	1"X 1/8" FLAT BAR
5	ROD	2FT	AL	QQ-A-200/5	3/8" O.D.



DRAIN CAN

DRAIN CAN & BRACKET

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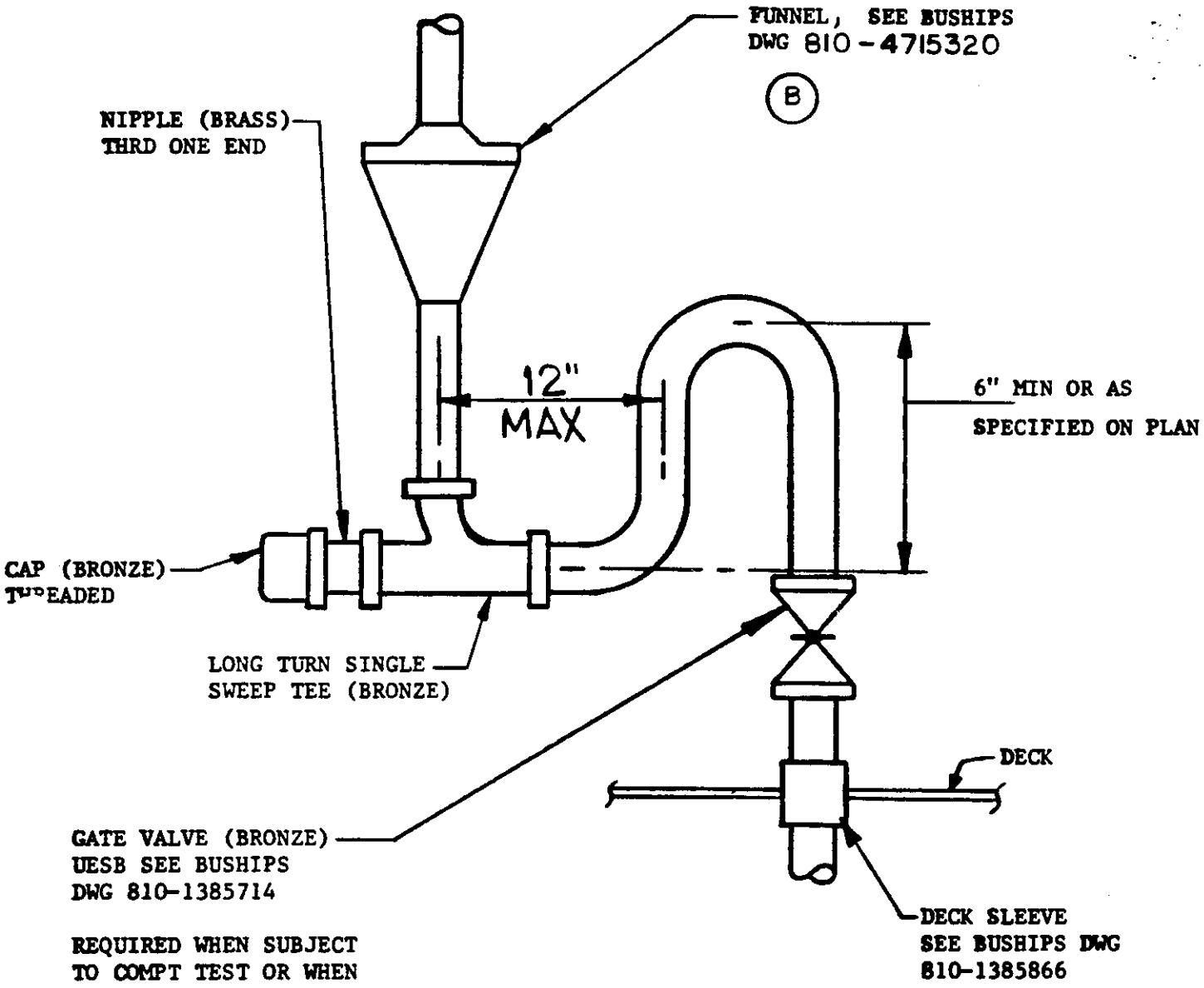
A/C CHW & CNDS DR
STANDARD DETAILS
6 1/2 QT. DRAIN CAN

SHEET NO. 12 OF 19



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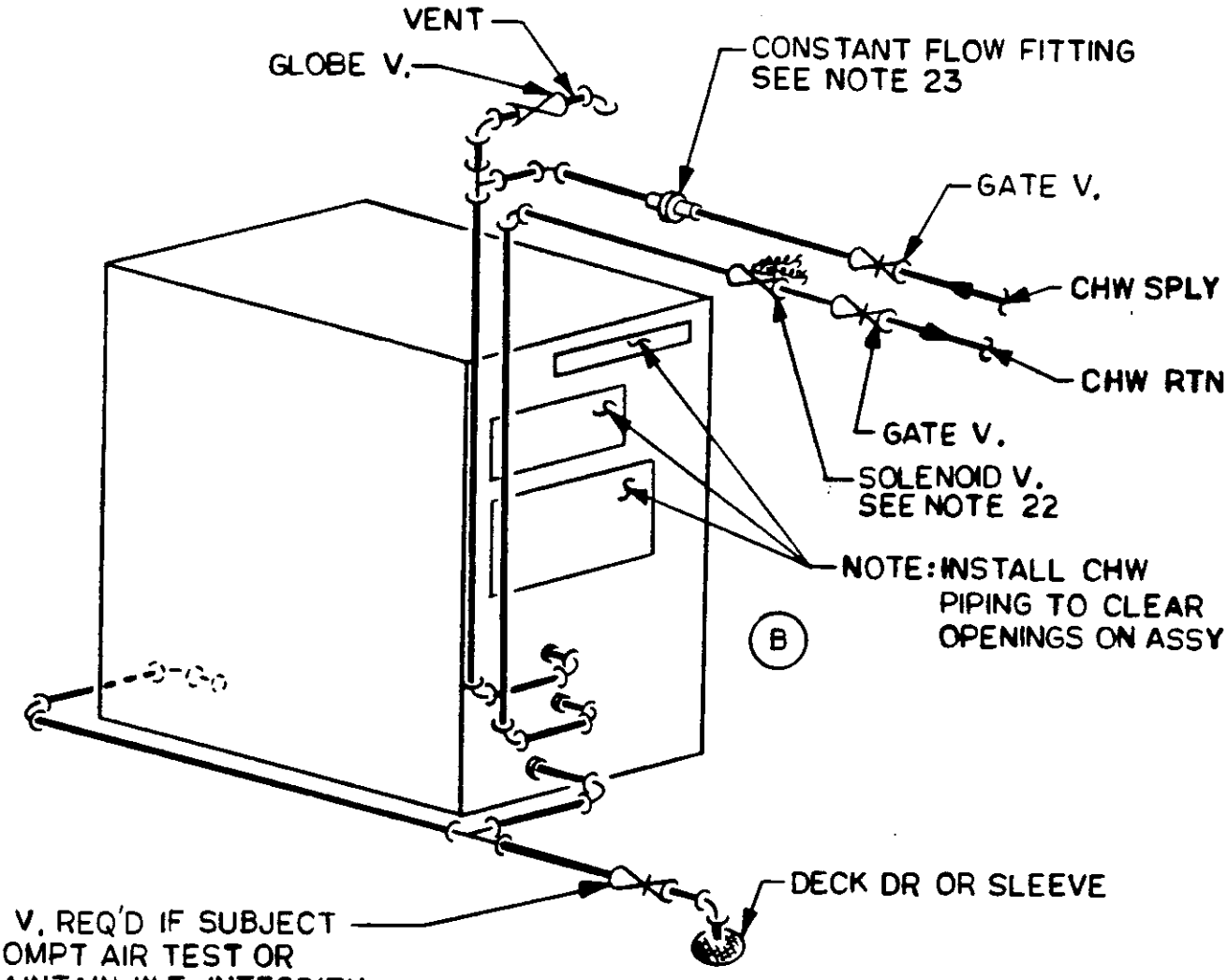
A/C CHW & CNDS DR
STANDARD DETAILS
DRAIN FUNNEL, TRAP, &
CLEAN OUT ASSY

SHEET NO. 13 OF 19

SIZE	SIZE	CHW IN & OUT	CNDS DR
21	3	1"	1"
22	5	1-1/4"	1"
23	7.5	1-1/4"	1"
24	10	1-1/2"	1"
25	15	2"	1"

SECTIONAL — NON SECTIONAL



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A/C CHW & CNDS DR
STANDARD DETAIL
TYPICAL PIPING ARRGT
FAN COIL ASSEMBLIES

TBG SIZE IPS IN.	OUTSIDE DIA. IN.	CROSS SECT. FLOW AREA SQ. IN.	MAX GPM	ALLOWABLE VELOCITY FT/SEC.	PRESSURE DROP PSI/100'	WALL THK IN.
1/2	0.840	0.396	5	4.051	4.946	0.065
3/4	1.050	0.665	10	4.825	4.864	
1	1.315	1.103	19	5.527	4.537	
1 1/4	1.660	1.805	35	6.221	5.051	0.072
1 1/2	1.900	2.422	51	6.756	4.933	0.072
2	2.375	3.832	93	7.786	4.809	0.083
2 1/2	2.875	5.764	152	8.461	4.375	0.083
3	3.500	8.605	256	9.548	4.226	0.095
3 1/2	4.000	11.401	364	10.243	4.114	0.095
4	4.500	14.402	466	10.381	2.946	0.109
5	5.563	22.173	797	11.532	2.769	0.125
6	6.625	31.743	1190	12.028	2.407	0.134
8	8.625	54.485	2045	12.027	1.757	0.148

NOTE: TUBING 90/10 CNA MIL-T-16420 TYPE I CLASS 200

(B)

THE ABOVE TABLE IS PROVIDED AS A GUIDE ONLY. PRESSURE LOSS CALCULATIONS SHOULD BE PERFORMED WHENEVER ADEQUATE SYSTEM PRESSURE IS IN QUESTION.

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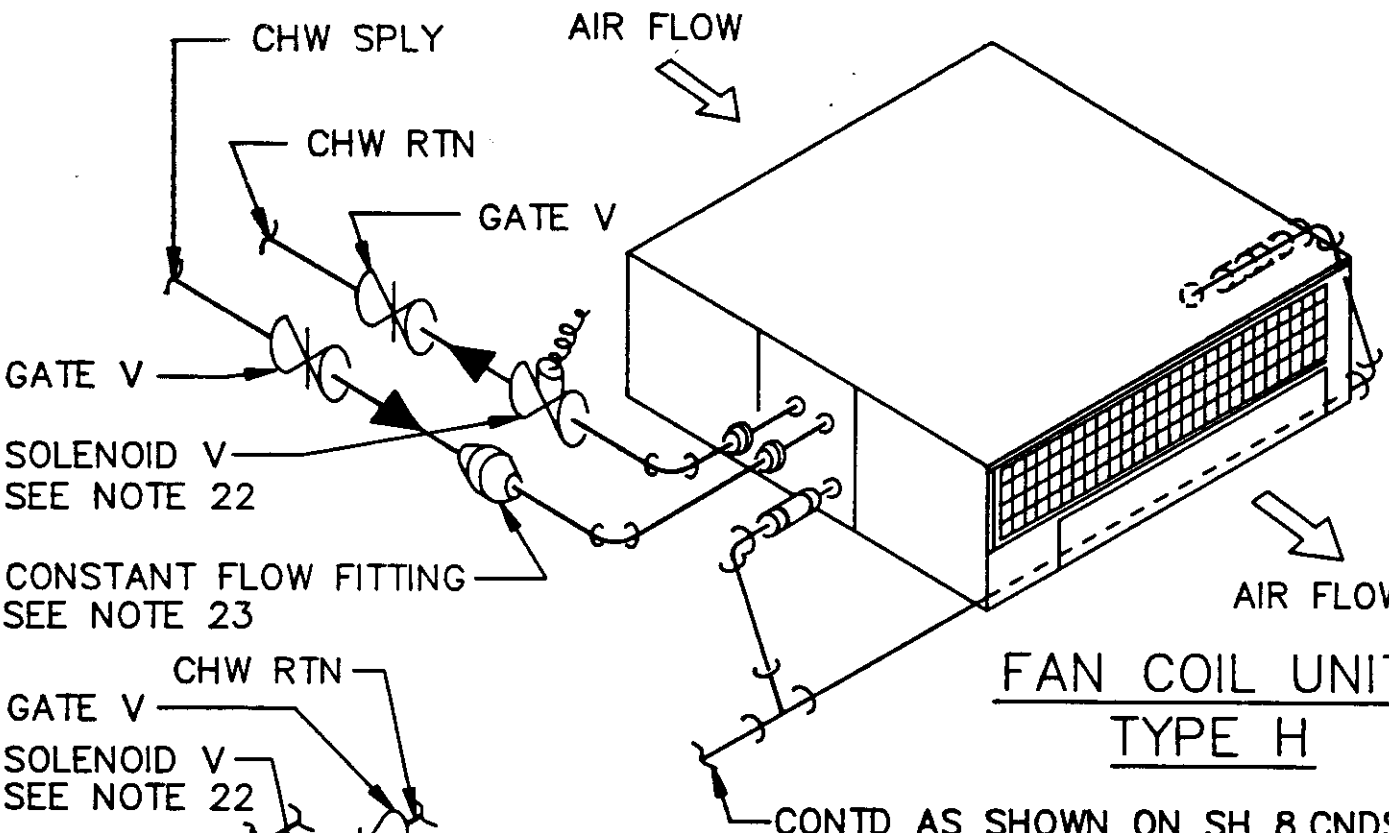
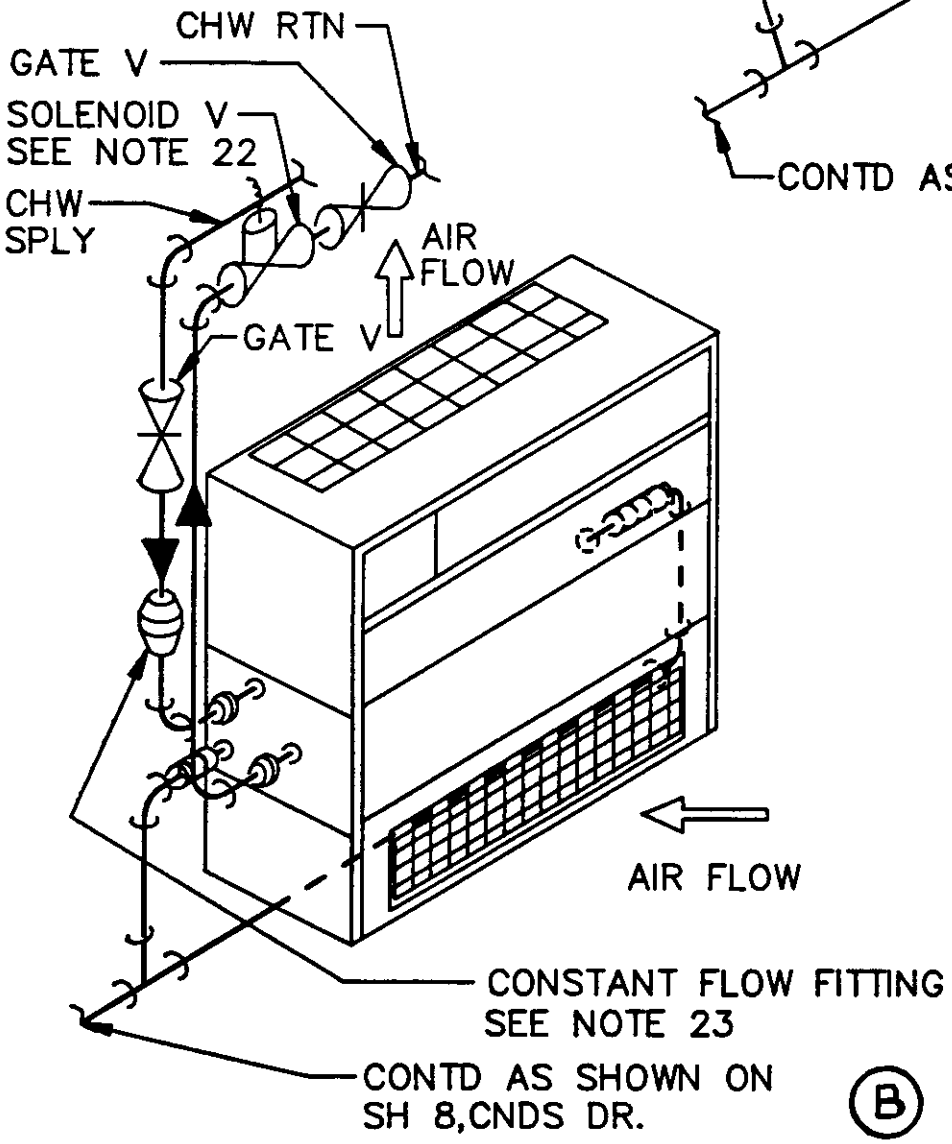
A/C CHW & CNDS DR
STANDARD DETAILS
CHW TUBING DATA



FAN COIL UNIT
TYPE H



FAN COIL UNIT
TYPE V

SIZE	CHW IN & OUT	CNDS DR
H1,V1	1/2	1"
H2,V2	1/2	1"
H3,V3	1/2	1"
H4,V4	1/2	1"
H5,V5	1/2	1"
H6,V6	1"	1"
H7,V7	1"	1"
H8,V8	1"	1"

(B)

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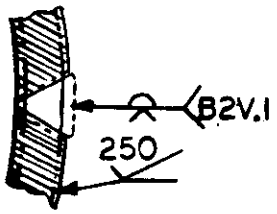
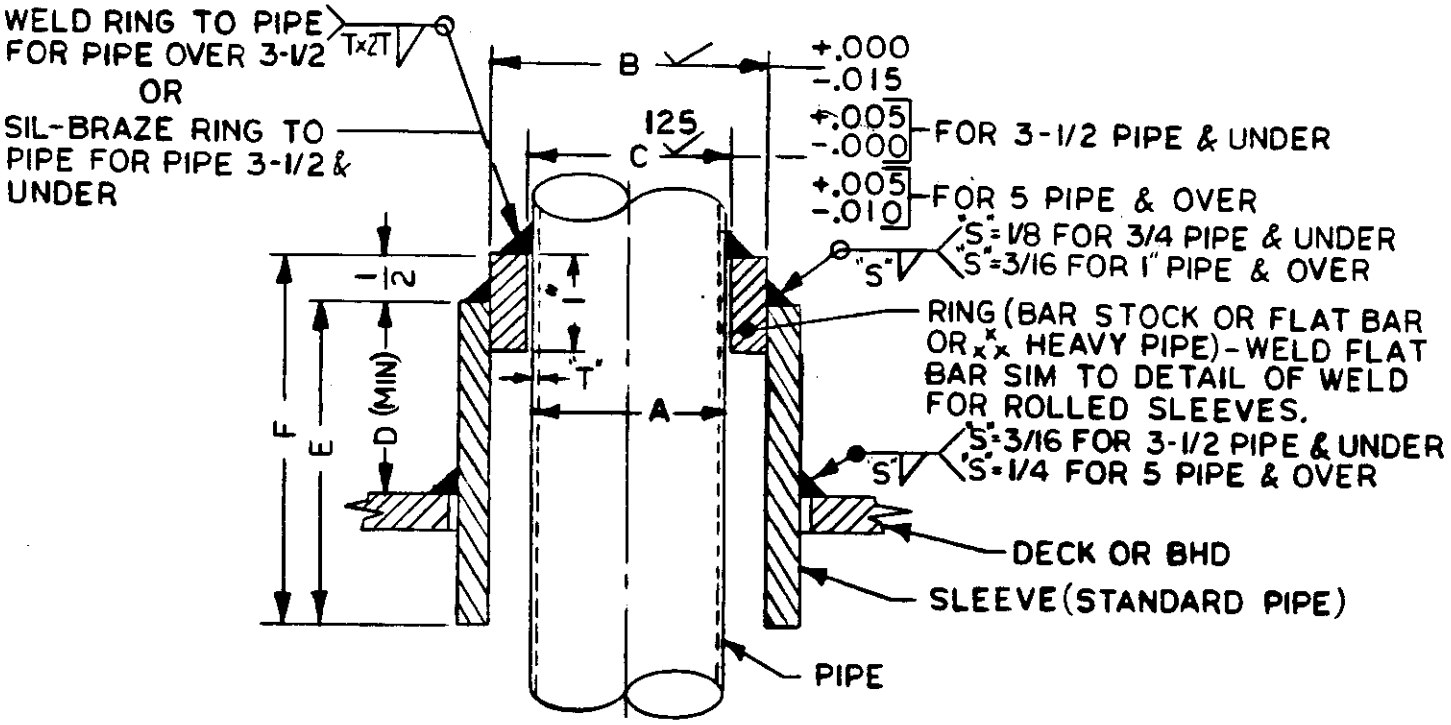
A/C CHW & CNDS DR
STANDARD DETAILS
TYPICAL PIPING ARRGT
STD FAN COIL UNITS

SHEET NO. 16 OF 19



DETAIL OF WELD
FOR ROLLED SLEEVES



DK & BHD CONN USING STD PIPE

PIPE SIZE	A	SLEEVE			RING			D	E	F	HOLE CUT DIA
		O.D.	THK	I.D.	SIZE	B	C				
1/2	.840	1.660	.140	1.380	1-1/2 R.BAR	1.345	0.842	3	4-1/2	5	1-3/4
3/4	1.050	1.900	.145	1.610	1-1/4 PIPE	1.574	1.052	3	4-1/2	5	2
1	1.315	2.375	.218	1.939	1-1/2 PIPE	1.885	1.317	3	4-1/2	5	2-1/2
1-1/4	1.660	2.875	.276	2.323	2 PIPE	2.253	1.663	3	4-1/2	5	3
2-1/2	2.875	4.000	.318	3.364	3 PIPE	3.285	2.878	4-1/2	6	6-1/2	4-1/8
3-1/2	4.000	5.563	.258	5.047	5 R. BAR	4.983	4.018	6	7-1/2	8	5-11/16
5	5.563	6.625	.280	6.065	6 PIPE	5.995	5.688	8-1/2	10	10-1/2	6-3/4
6	6.625	8.625	.500	7.625	1/2 F.BAR	7.500	6.750	10	11-1/2	12	8-3/4
8	8.625	10.750	.594	9.562	1/2 F.BAR	9.414	8.750	10	11-1/2	12	10-7/8

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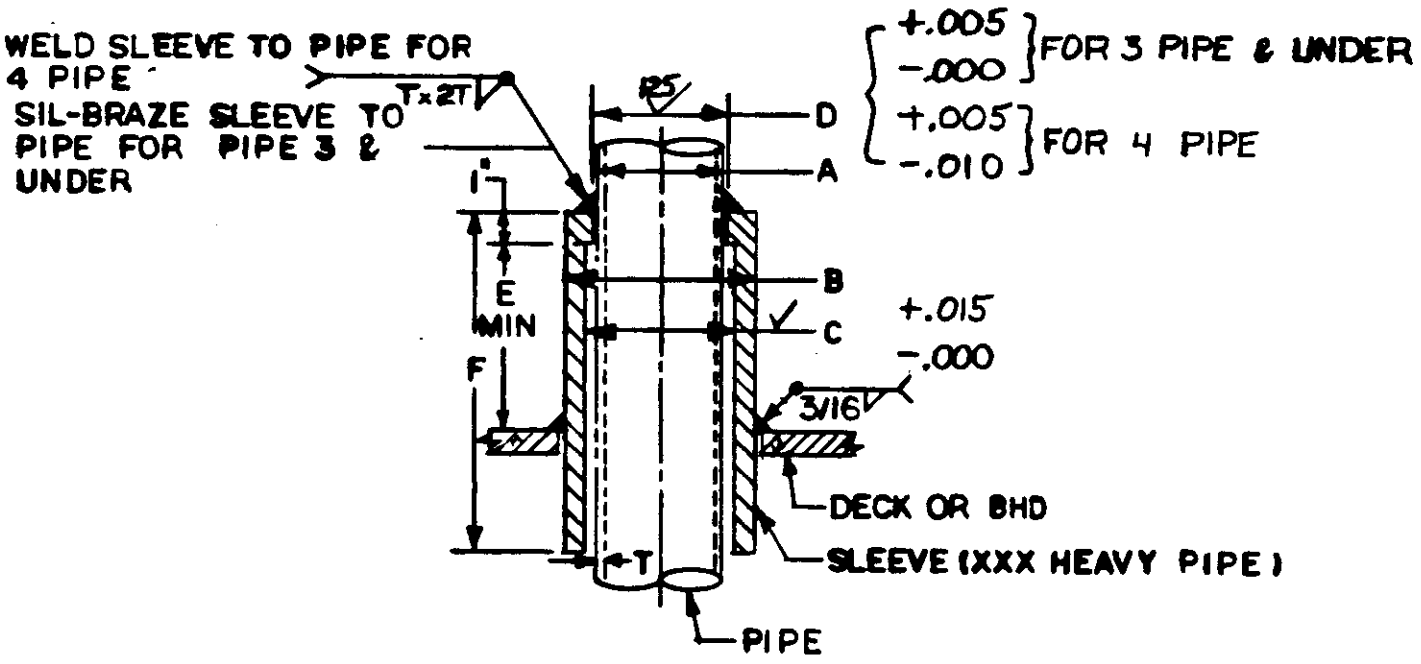
A/C CHW & CNDS DR
STANDARD DETAIL
INSULATED SLEEVE FOR BHD AND DK CONNECTION, STD PIPE



DECK & BHD CONN USING XXX HEAVY PIPE

PIPE SIZE	A	SLEEVE B	SLEEVE THK	SLEEVE C	SLEEVE D	E	F	HOLE CUT DIA
1-1/2	1.90	2.875	.600	2.150	1.903	3	5	3
2	2.375	3.50	.600	2.625	2.378	3 -1/2	5-1/2	3-5/8
3	3.50	4.50	.674	3.750	3.503	5-1/4	7-1/4	4-5/8
4	4.50	5.563	.750	4.750	4.625	6 3/4	8 3/4	5-11/16

MATERIAL SPECIFICATIONS

MATERIAL TYPE	MATERIAL	MATERIAL SPECIFICATION	ALTERNATE MATL SPEC
STANDARD PIPE	STEEL PIPE	MIL-T-20157	ASTM-A53 GR B
FLAT BAR	STEEL	ASTM - A 36	
ROUND BAR	STEEL	ABS GR A-HB	
XXX HEAVY PIPE	STEEL	ASTM-A53 GR B	

(B)

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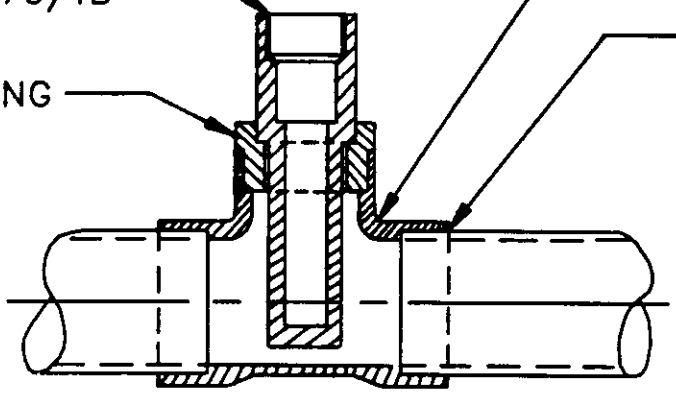
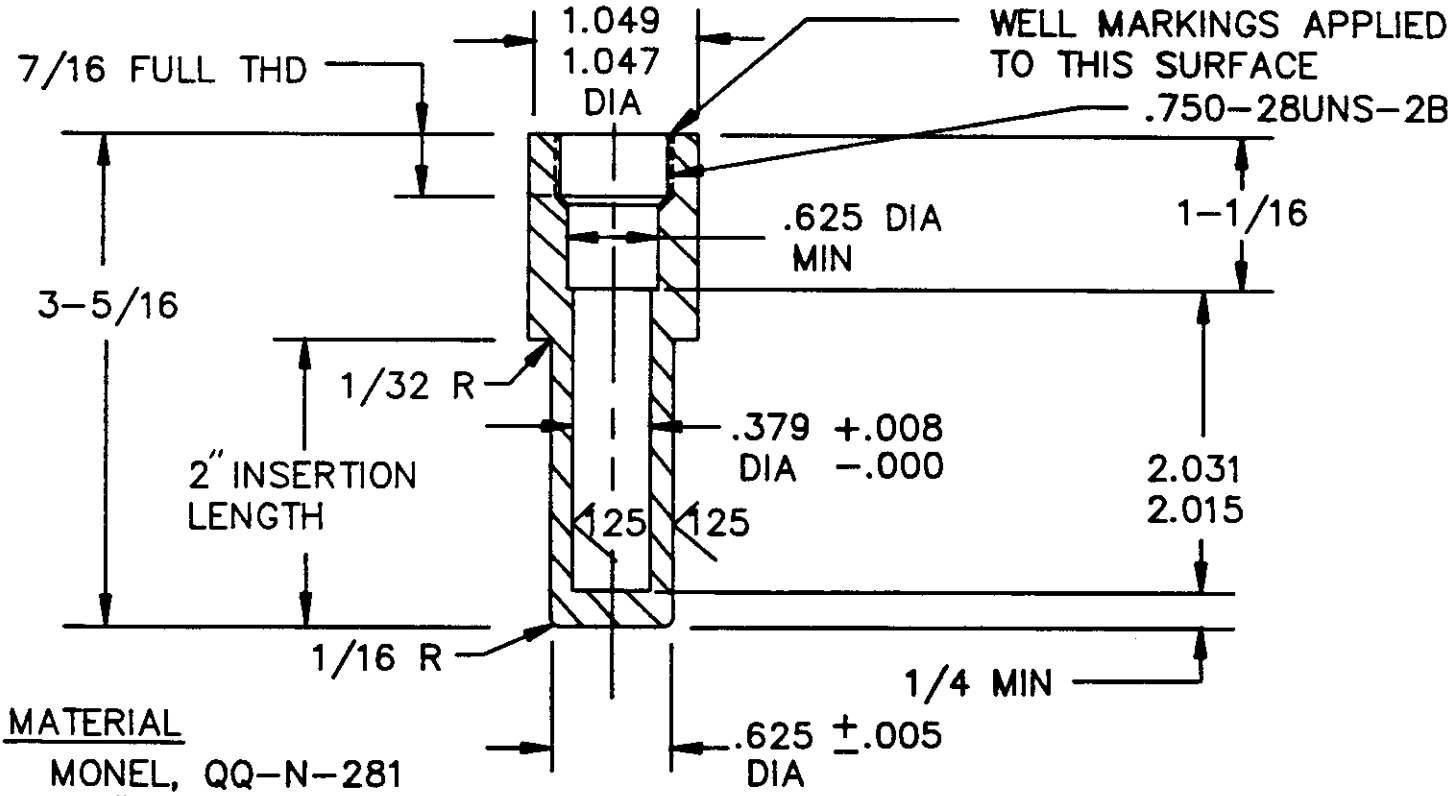
A/C CHW & CNDS DR
STANDARD DETAIL
INSULATED SLEEVE FOR BHD AND DECK CONNECTION
XXX HEAVY PIPE



DETAIL

1" TEE WITH 1" X 3/4 RDCG
BUSHING & THERMOMETER WELL



MATERIAL

MONEL, QQ-N-281
CL "A", ROUND, USE 1-1/8 DIA
9Z 9530-00-239-4461

NOTES

1. UNLESS OTHERWISE SPECIFIED TOLERANCES ON: FRACTIONS: ±1/64
DECIMALS: ±0.010
ANGLES: ±1/2 DEG
2. ALL DIMENSIONS IN INCHES

(B)

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A/C CHW & CNDS DR STANDARD DETAILS TYPICAL PIPING ARRGT THERMOWELL TYPE M
SHEET NO. 19 OF 19